

## CERTIFICATE TO OPERATE

**OWNER:** Town of Tappahannock

**FACILITY/SYSTEM NAME:** Tappahannock Wastewater Treatment Plant

**PERMIT NUMBER:** VA0071471

**DESCRIPTION OF  
FACILITY/SYSTEM:**

This CTO addresses the conversion of the existing oxidation ditches to a 4-stage Bardenpho process with tertiary filters. The project has been designed to improve nutrient removal to 4 mg/l TN and 0.3 mg/l TP (annual average limitations) at an annual average flow of 0.8 MGD. The discharge point is unchanged.

The projects covered under this CTO include the following:

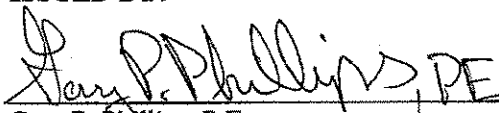
- in-line equalization basin with mixers and diffusers;
- new anoxic basin including mixers that serves as the first stage of a 4-Stage Bardenpho process;
- the existing oxidation ditch basins (two existing trains) are converted into the other three stages of the 4-Stage Bardenpho process (i.e., aerobic zone 1, anoxic zone 2, and aerobic zone 2). Each "converted" oxidation ditch contains nitrate recycle pumps, anoxic mixers, and fine bubble diffusers with associated blowers;
- a new recycle pump station to facilitate the return of nutrient laden recycle streams to the equalization basin for bio-augmentation;
- new deep-bed tertiary filtration is provided to achieve total suspended solids and particulate phosphorus removal;
- a new filter feed pump station feeds the tertiary filters;
- chemical storage and feed for alkalinity, polymer, and carbon source;
- new aerobic digester with associated blowers and coarse bubble diffusers;
- and other minor changes.

The sewage treatment works has a Reliability Class I designation and will continue to meet the requirements of this classification by the provision of emergency generators (one new), alarms, and SCADA to monitor and relay status and alarms to 24 hour manned locations.

**AUTHORIZATION TO  
OPERATE:**

The owner is authorized to operate this facility in accordance with Section 190 of the Commonwealth of Virginia's *Sewage Collection and Treatment Regulations*.

**ISSUED BY:**

  
Gary P. Phillips, P.E.  
Wastewater Engineering  
Department of Environmental Quality

July 23, 2010  
Date